

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application.

COMPLETE LISTING OF THE CLAIMS:

Claims 1-14 : (Canceled)

Claim 15 : (Currently Amended) A substation ~~for use in a~~ of a long distance, megawatt power transmission and distribution network, comprising:

a) a single phase isolating high frequency high kilovolt transformer having at least one input primary winding coupled through a circuit breaker to a long distance, megawatt power distribution line and at least one output secondary winding;

b) an input solid state high frequency high kilovolt switching network comprising a plurality of semiconductor switching devices, the input switching network defining at least one input node for receiving an input power waveform from the transmission network and at least one output node connected to the at least one primary winding of the transformer;

c) at least one output solid state high frequency high kilovolt switching network comprising a plurality of semiconductor switching devices, the output switching network being connected to the at least one secondary winding of the transformer and defining at least one output node from which an output power waveform is taken from the substation; and

d) control means for controlling the switching devices of the input and output switching networks to generate the output power waveform at the at least one output node from the input power waveform applied to the at least one input node.

Claim 16 : (Previously Presented) The substation according to claim 15, in which the control means is operative for controlling the semiconductor switching devices in dependence upon current and/or voltage applied to the input switching network.

Claim 17 : (Previously Presented) The substation according to claim 15, in which the control means is connected to receive power condition signals from measurement means located to sense power flowing to the at least one input node, the control means being operative for outputting signals to the input and output solid state switching networks thereby to control switching of the semiconductor switching devices therein in response to variations to the power condition signals.

Claim 18 : (Previously Presented) The substation according to claim 15, in which the input switching network comprises a bridge circuit having at least one input node for each phase of an input supply.

Claim 19 : (Previously Presented) The substation according to claim 18, in which the control means is operative for controlling the semiconductor switching devices in the input switching network so that a single substantially sinusoidal waveform is generated in the at least one primary winding of the transformer, and for controlling the semiconductor switching devices in the output switching network to reconstruct output power

waveforms of different phase from the output power waveform in the secondary winding of the transformer.

Claim 20 : (Previously Presented) The substation according to claim 15, in which the control means is operative for controlling the semiconductor switching devices so as to produce at least one output voltage waveform which is independent of an input voltage waveform.

Claim 21 : (Previously Presented) The substation according to claim 15, in which the semiconductor switching devices are arranged in relation to the transformer so that, in the event of a failure of at least one of the semiconductor switching devices and the transformer and the control means, then power is not transmitted across the transformer.

Claim 22 : (Previously Presented) The substation according to claim 15, in which the control means is operative for controlling the semiconductor switching devices of at least the input switching network, in such a way as to match an input impedance of the substation to a source impedance of a supply line.

Claim 23 : (Previously Presented) The substation according to claim 22, in which the control means is operative for modifying a switching state of at least one of the switching devices thereby to control the source impedance in real time.

Claim 24 : (Previously Presented) The substation according to claim 15, and further comprising a limiting means for reducing a maximum output voltage produced in the event that a current drain exceeds a preset level.

Claim 25 : (Currently Amended) A long distance, megawatt power transmission and distribution network, comprising:

a) a long distance, megawatt power transmission line for the transmission of electrical power from a generator;

b) a substation comprising:

i) a single phase isolating high frequency high kilovolt transformer having at least one input primary winding coupled through a circuit breaker to the long distance, megawatt power transmission line and at least one output secondary winding,

ii) an input solid state high frequency high kilovolt switching network comprising a plurality of semiconductor switching devices, the input switching network defining at least one input node for receiving an input power waveform from the transmission network and at least one output node connected to the at least one primary winding of the transformer,

iii) at least one output solid state high frequency high kilovolt switching network comprising a plurality of semiconductor switching devices, the output switching network being connected to the at least one secondary winding of the transformer

and defining at least one output node from which an output power waveform is taken from the substation,

iv) control means for controlling the switching devices of the input and output switching networks to generate the output power waveform at the at least one output node from the input power waveform applied to the at least one input node,

v) the substation being operatively connected to the transmission line; and

c) at least one distribution line connected to an output of the substation for onward supply of power to a load.

Claim 26 : (Previously Presented) The network according to claim 25, in which the load comprises a second transmission line for transmitting alternating voltage from the generator, and in which the control means is operative for controlling the switching devices to generate the output power waveform for supply to a second network which is in phase with a phase of a voltage on the second network.

Claim 27 : (Previously Presented) The network according to claim 25, in which the substation comprises two transformers and associated input and output switching networks connected in parallel between a supply line and the output load.

Claim 28 : (Currently Amended) The network according to claim 25, in which ~~a circuit breaker and a first isolator are~~ is provided upstream of the substation in addition to the circuit breaker, and in which a second isolator is provided downstream of the substation.